

## **Chapter V**

### **Conclusion**

#### **5.1- Summary**

The importance of private investment stems from the fact that the lessening of extended poverty and unemployment on the one hand and achievement of sustainable development on the other depends on investment by the private sector. Recent studies have shown that private investment is more efficient and more productive than public investment. Existing mismanagement in public enterprises leads to inefficiency. On the contrary, the importance of profitability in the private sector constrains them to use scarce resources in the best way through maximization or optimization of production and investment; this would lead to increase in employment, reduction of poverty, sustainable development and growth. Thus the core question is that what factors determine the rate of private investment?

The initial theories have emphasized the role of reduction of interest rate and increase in output for encouraging private investment. But there are *ample grounds for doubting* these theories. As a result, researchers have realized the importance of uncertainty in determining the private rate of investment. Many follow up questions arise: what is the mechanism through which uncertainties affect the rate of private investment? Can we really expect that uncertainties affect investment negatively? What factors can be considered to be a proxy of uncertainty?

The remainder of chapter one explains that there are three schools dealing with the effect of uncertainty on economy and investment: traditional finance, neo-classics and post-Keynesians. They diverge through their different definitions of uncertainty

and different assumptions about conditions in which investment decision is taken. Traditional finance emphasizes on the calculation of risk premium, while the risk premium determines the difference between the returns of a project and portfolio of the entire market. Neo-classical school researches consider uncertainty of a phenomenon as the variance of its outcomes. The common approach to determine the effect of uncertainty on investment is to maximize the value of the firm under existing uncertainty and under different assumptions. Different assumptions yield various outcomes. It inherently depends on the curvature of the investment function. Investment functions with convex marginal adjustment costs yield a positive relationship with uncertainty. Irreversibility is another characteristic of a project that is emphasized by some researches. This assumption implies that ones that an investor incurs sunk costs it is almost impossible to disinvest later. This fact makes investor more prudent. Then the theory concludes that more uncertainty leads to lower investment. Another approach in neo-classical school defines uncertainty as a covariance between technology's return and the discount rate. This study distinguishes between risks of a stock in financial markets and uncertainty in the value of outputs of a technology. The study follows to ascertain the effect of uncertainty on investment in a general equilibrium model. The article concludes that a mean preserving spread in distribution in the state of nature that affects firm's technologies or household's preferences has no effect on aggregate investment, but it alters the allocation of capital and labor among technologies.

In chapter 2, I demonstrated that Iran has potential for high rates of investment. Various indices of population and literacy rates, rich natural resources and energy, unique geopolitical location were favorable for attaining a high rate of investment in the country. But it has hardly gone beyond 15 percent in the last four

decades. This is possibly due to the negative role played by some aspects of uncertainty.

Chapter 3 indicates that post-Keynesians are intrinsically different from neo-classics. Post-Keynesians argue that economical phenomena are the manifestation of individuals' reactions to their expectations. As these expectations take shape in a unique situation (e.g. social, political and international circumstances) therefore these cannot be replicated again. Thus, it is impossible to predict the future on the basis of past events. The usage of expected values and variances of variables for making predictions is inaccurate consequently. Hence we cannot define uncertainty as a variance of a variable. Uncertainty is defined as something that we do not know anything about.

I accept the post-Keynesian definition of uncertainty but I argue that if the world is identically uncertain then there must be no difference between various countries. It seems that the existing institutions and cultures in each country determine the predictability of individuals' reactions to their expectations. Thus, the future is predictable to different extents in different countries. The level of predictability in each country can also vary over the time depending upon the changes in institutions. The level of unpredictability about the future can lead to a reduction in the private investment rate. I define an element of uncertainty as any factor, which distorts information and predictions about the future. Often, studies concentrate on uncertainty about prices, demand or costs and deal with them by maximizing the value of the firm through the expectation of all future probable receipts. But, by foregoing definition, it embraces a wide range of factors that bring about not only unpredictable fluctuations in prices but also affect the state of confidence of entrepreneurs and their trust on information at hand. There must be a time horizon within which entrepreneurs can

rely on information and assess their projects through the comparison of the adjusted pay back period of their projects with that horizon.

The length of the time horizon is calculable. If price fluctuates with geometric Brownian motion then each movement of price in the next period can be predicted on the basis of current price and the variance of past fluctuations. My intuition is that investors use the best worst strategy instead of maximization of expected returns in an uncertain environment. This is because the strategy which emerges for such maximization is totally useless if the worst scenario actually results happens. This means that the investor supposes that price decreases continuously with a geometric Brownian motion (worst condition). If this is the case, then the time horizon is defined as the time that it takes for the current price to reach the lower price (lower bound) that occurs in the past. This time horizon is compared with adjusted payback period of projects. Projects with longer adjusted payback period will be rejected. Among the viable projects, a project with shorter adjusted payback period is preferable. The more is the uncertainty about the future, the shorter the horizon within which information can be trusted. This time horizon depends on types of uncertainty that result in an optimistic or pessimistic atmosphere about business. The effect of uncertainty on investment can be compared with catalysts in chemical reactions. These factors might not have any direct participation in a reaction but they affect it. Therefore, instead of assessing the impact of unpredictable future receipts on private investment, the effect of each possible factor resulting in uncertainty is examined for its impact on the private investment rate.

In chapter 4 twenty three factors relating to uncertainty are classified into three different categories: changes in policies and macroeconomic outcomes, the quality of public governance and socio- political institutions and conflicts. A panel data method

is applied even though my study is about Iran. It is because of two reasons: first, shortage of data in some variables like rule of law, control of corruption and property rights, make it impossible to utilize time series methods. Second, there are some factors, which hardly change over time for example, democracy or property rights. So, the analysis of these factors in a time series process is almost impossible. The methodology of panel data gives us the opportunity to take these factors into account in our analyses. The data have been collected about 39 countries including Iran. The data have been examined for diagnosis of unit root, serial correlation, contemporaneous correlation, outliers, heteroskedasticity and multicollinearity. In macroeconomic panel a fixed effects model with AR (1) is applied to allow for serial correlations. The coefficient of some dummy variables of some countries were eliminated and a constant term is put in the model to reduce the effect of existing multicollinearity. A PCSE estimator is utilized to allow for heteroskedasticity and contemporaneous correlation. The panel is estimated twice once with inflation uncertainty and once with real interest rate uncertainty. These two variables are not used simultaneously to avoid severe multicollinearity. The panel of socio-political institutions and conflicts does not exhibit multicollinearity. Yet there is a suspicion about multicollinearity between slow moving variables like war and dummy variables. Therefore, a Fixed Effects Vector Decomposition (FEVD) model is used in addition to PCSE to control for this kind of variables. The effect of inequality, coups and constitutional changes is estimated in different panels so as to facilitate maximum use of data. In the panel for the quality of governance, there were at most three observations per country. Again the coefficients of some dummy variables are equated to zero and a constant term is added to model to avoid severe multicollinearity. Therefore, a LSDV with cluster covariance matrix is applied to

allow for a small number of observations per country, heteroskedasticity and serial correlation existing in the data. Depending on different properties of panels, proper estimators (e.g. PCSE, FEVD or LSDV) have been employed.

## **5.2- Empirical Findings**

The main finding is that not all suggested measures of uncertainty are significant in determining the private investment rate. Among the macroeconomic factors I cannot find enough evidence to reject the hypothesis of negative effect of uncertainty relating to exchange rate distortion, terms of trade, growth and trade on private investment rate. Other factors (i.e. uncertainty about credit to private sector, inflation and real interest rate) have an insignificant effect on the rate of private investment.

The elasticity of the private investment rate to exchange rate distortion uncertainty is - 0.0343. The elasticity of the private investment rate to uncertainty about growth, trade and terms of trade are  $-0.018$  ,  $-0.124$  and  $-0.0352$  respectively.

Among the socio-political institutions and conflict factors the negative effect of civil war, purges, coups and constitutional changes cannot be rejected. There is not enough evidence that other measures of socio-political uncertainty (i.e. democracy, revolutions, inequality, assassinations, strikes and riots) have a significant impact on the private investment rate. However I cannot reject the positive effect of war on the private investment rate.

The growth rate of the private investment rate for every unit change in civil wars, purges, coups and constitutional changes are  $-0.341$  ,  $-0.0431$  ,  $-0.139$  and  $-0.108$  , respectively. However, The growth rate of the private investment rate for every unit change in war is 0.173.

Among the indices of the quality of public governance, there is not enough evidence to reject the hypothesis that worsening condition of regulatory burden, rule of law and property rights will reduce the private investment rate. However, the hypothesis of negative effect of government contribution in economy on the private investment rate can be rejected. The effect of corruption on the private investment rate is quite surprising. While intuition says that corruption has a negative effect on the private investment rate, our evidence rejects this hypothesis. This could be because of the effect of corruption proceeds disguised as investment as well as the negative effect of corruption on GDP operating through its effect on capital productivity.

The growth rate in the private investment for every unit change in regulatory burdens and rule of law are 0.408 , 0.46 respectively. The elasticity of the private investment rate to property right is 0.625. However, the growth rate in the private investment for every unit change in control for corruption is  $-0.215$ .

As some coefficients have come in form of elasticity and the others have come in form of growth rate we cannot compare them except we multiply the growth rate by its related variable, which means that the elasticity of the second form is not fix.<sup>1</sup> As data are not available for a common year among these three panels, this comparison is not carried out. But if we want to compare elasticities with each other, property rights occupies first place following by trade uncertainty, terms of trade uncertainty, exchange rate distortion uncertainty and growth uncertainty. And among variables that their coefficients have come in form of growth, rule of law occupies the first place, following by regulatory burdens, civil war, coups, constitutional changes and purges. In both groups governance quality variables show higher rank in

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<sup>1</sup> - The equations have come in appendix A for better clarification.

comparing to macroeconomic uncertainty and socio-political institutions and conflicts.

### **5.3- Policy implications**

To sum up, the lack of investment is not a hard problem but a soft problem. This means that we cannot solve this problem mechanically simply by a fiscal or monetary policy. Instead it must be considered as a net outcome of socio-politico-economical problems. Investors need a stable and predictable policy and political environment along with rigorously enforced, market friendly regulations to be confident about investing their resources. This sadly has not been the case in Iran where political stability has been endangered by violent disturbances, and the free functioning of the market mechanism has been hindered by anti market phenomena such as unnecessary regulations, not properly protected property rights or lawlessness.

In case of terms of trade uncertainty maybe we cannot do much uncertainties are external and out of control. But in Iran extraordinary dependence to oil export income could jeopardizes private investment. Thus, a policy toward diversification of exports can encourage investors by reducing the ill effect of terms of trade uncertainty.

Investors must be assured about the exchange rates policies of the government. They must be clear as to whether the policy is inward or outward-oriented and also feel assured about the certainty of the policy. Every change in strategy must be accompanied by faster awareness and preparedness of investors. The same is true about trade policy. It is very common in foreign trade policy for government to abruptly ban the exports of agricultural products, cement or steel to control domestic prices or the imports of some other goods on the pretext of protecting the domestic industries. Apart from the advantages and disadvantages of this policy, this kind of



sharp U-turns will hamper private investment. Therefore, in the case of inevitable situations it is better that the government gives due notice before enforcing a policy so as to allow the entrepreneurs time to adjust their strategies with the new law. Dramatic changes often occur after presidential elections in Iran. This is because new presidents change executive authorities across the board. It leads to dramatic changes in policies and strategies. Thus, a restriction of presidential power to change executive authorities and officers can lead to more stable outcomes.

The government must follow policies that lead to a predictable rate of growth. In case of Iran unpredictable changes in crude oil prices is one of the causes of the growth unpredictability. Reinvesting the oil export incomes in a portfolio in international financial markets with more predictable returns could be a good strategy for elimination of the effect of unpredictability of the oil export proceeds on the growth. As governments in Iran try to neutralize the budget deficit by money supply, an unpredictable budget deficit can lead to an unpredictable growth rate through unpredictable monetary policies. Every year the government tries to anticipate next year's income on basis of next year's expected expenditure. Given that the budget for each year is planned in advance of the actual accrual of oil revenues that finance such expenditures, the uncertainty in revenues can lead to unforeseen budget deficits. Therefore, writing of budget on basis of the more certain and reliable incomes can help to fix this problem.

Politically, it is very important that policies can preserve human capital as well as prevent severe social unrests and arm conflicts like civil wars. As social unrests and conflicts can lead to uncertainty for investors and lead to a reduction in investments, a well-tailored policy is needed to solve the socio-political problems without giving rise to uncertainties. Iran has experienced some cases of ethnic

conflicts especially in frontier areas, and also social unrests in the last four decade. It also has experienced some purges. As these problems are always mixed with security aspects the security authorities should contemplate on the economic consequences of their strategies and policies.

Policies for a better quality of governance might have the largest effect on the private investment rate because they function as fundamental infrastructure for production and business activities. Changing regulations, for bringing about proper market friendly reforms by reducing the red tape, is a must. In Iran a reform in labor market and trade regulation is a necessity. One of the most effective strategies is a continuous education of policy makers, particularly of the legislature. As these members change over the time and sometimes inexperienced individuals enter the legislature, a continuous process of education of members can enhance their effectivity. Another strategy could be promoting think tanks in the country. Professionals and highly skilled specialists in different fields can help the policy makers in their activities.

Enhancing the rule of law and property rights, especially intellectual property, needs reforms in cultural as well as judicial infrastructures. A powerful judicial system must rigorously enforce rights and contracts and prevent fraud in a time and cost effective way. Time and cost effective procedures have been recently emphasized by the World Bank in a project, which is named as Doing Business. Separation of commercial claims courts from other kinds of courts and development of specialization in settlement of commercial claims can lead to a more time and cost effective judicial system and thereby a better rule of law.